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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/536,833

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Maurizio Galimberti

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EXAMINER

FISCHER, JUSTIN R

ART UNIT

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1791

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/536,833	<b>Applicant(s)</b> GALIMBERTI ET AL.	
	<b>Examiner</b> Justin R. Fischer	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 49-54 and 58-98 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 49-54 and 58-98 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 49-54 and 58-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka (JP 01109107) and further in view of Larson (US 6,598,645). Tanaka is directed to a motorcycle tire construction comprising a carcass structure 5, a belt structure 6-9, a tread band 1, a pair of sidewalls 2, and a pair of bead wires/cores 4. In this instance, Tanaka fails to include an elastomeric material that is "associated" with said belt structure and comprises at least one layered inorganic material comprising an individual layer thickness from 0.01 to 30 nanometers. However, it is well known to include inorganic materials to improve the reinforcement of a given elastomeric composition, as shown for example by Larson. In this instance, Larson suggests the inclusion of intercalated organoclays (in rubber/cord laminates, such as belt plies) that are at least partially exfoliated in situ, wherein the exfoliated platelets have a thickness of about 1 nanometer and the particles of the stacked platelets have a thickness between 10 and 40 nanometers (Abstract, Column 2, Lines 25-35, and Column 4, Lines 55-67). As such, one of ordinary skill in the art at the time of the invention would have found it obvious to include such an inorganic reinforcement in the belt construction of

Tanaka (such a construction includes a belt structure associated with the claimed inorganic material).

As to the specific arrangement of the belt, Figure 1 of Tanaka clearly depicts a pair of crossed belt layers 6,7 and a radially outermost, circumferential belt layer 9 (inorganic materials can be included in any belt layer, including zero degree layer). In this instance, the claim language (associated with at least one layer of a crosslinked elastomeric material) is satisfied if either the topping/coating rubber of the zero degree layer is formed with the relevant composition or if the topping/coating rubber of the adjacent belt working ply is formed with the relevant composition.

With respect to claims 51, 52, 84, and 85, a portion of the intercalated organoclays are exfoliated, such that both intercalated clays and exfoliated portions are present.

Regarding claims 53, 54, 88, and 89, the increase in d-spacing appears to be a direct result of incorporating said inorganic material in an elastomeric composition. Applicant has not identified any specific processing means that results in the claimed increase and as such, one of ordinary skill in the art at the time of the invention would have expected the belt layers of Tanaka in view of Larson to demonstrate the claimed increase in d-spacing.

As to claim 58, the claim is satisfied if the topping/coating rubber of the belt working plies is formed with the relevant composition (belt working plies 6 and 7 are arranged between carcass structure and zero degree layer 9).

With respect to claim 59, the claim is satisfied if the topping/coating rubber of the zero degree ply 9 is formed with the relevant composition as it is positioned between the tread and a layer 8 formed of zero degree reinforcement cords.

Regarding claims 60, 61, 86, and 87, the claimed values are consistent with the dimensions of conventional tire belt layers.

With respect to claims 62 and 63, Larson describes the inclusion of said inorganic material at a loading between 30 and 100 phr (Column 4, Lines 5-10).

As to claims 64-67 and 91, Larson suggests the preferred inclusion of smectite clay, such as montmorillonite clay (Column 2, Lines 45-55).

Regarding claims 68 and 69, the inorganic material/clay of Larson is treated with a quaternary ammonium salt (Column 2, Lines 49-52).

With respect to claims 70-73, 92, and 93, the claimed elastomers represent the well known conventional elastomers used in the tire industry, as shown for example by Larson (Column 6, Lines 30-50). It is emphasized that each of the claimed elastomers is extensively used in a wide variety of tire components, including the belt structure. Lastly, the claimed elastomers are recognized as having a glass transition temperature in accordance to the claimed invention.

As to claims 74-77, 81, 94, and 98, silane coupling agents are conventionally used in tire rubber compositions to “couple” or connect silica to a base elastomer component, which ultimately improves the properties of a given tire component. Larson provides one example of such a composition (Column 7, Lines 25-30).

With respect to claims 78-80 and 85-97, tire compositions are generally described as including a plurality of reinforcing fillers, such as carbon black, silica, and/or clay materials. In this instance, Larson recognizes the manufacture of rubber/cord laminates, such as belt layers, comprising each of the aforementioned reinforcing fillers (Column 6, Lines 50-60).

### ***Response to Arguments***

3. Applicant's arguments filed January 3, 2008 have been fully considered but they are not persuasive.

Applicant initially argues that neither Larson '645 nor Tanaka teach or suggest why a person of ordinary skill in the art at the time of the invention would choose to associate the at least one layer of crosslinked elastomeric material to the zero degree cord layer or any other specific layer in the belt structure. A fair reading of Larson '645 suggests the inclusion of such an elastomeric composition in a variety of tire components, including those formed of rubber/cord laminates. It is well recognized that carcass plies and belt plies represent the most common "rubber/cord laminates" in the tire industry and thus, one of ordinary skill in the art at the time of the invention would have been motivated to form the belt topping/coating rubbers of Tanaka with the relevant composition. It is further noted that Larson '645 expressly suggests the applicability of such a composition to carcass "belts", which are recognized as the common belt plies (Column 1, Lines 20-25).

Applicant additionally contends that Larson '645 discloses a ply wherein said rubber composition encapsulates said cords, which is in direct contrast to the claimed

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layer of crosslinked elastomeric material that does not contain any cord. This argument, however, is not commensurate in scope with the claims as currently drafted. In particular, the claim language does not define the relevant elastomeric layer as being devoid of cord reinforcement- the claim simply requires that the at least one layer of a plurality of circumferential coils is associated with at least one layer of a crosslinked elastomeric material. Thus, the claim is satisfied if, for example, the zero degree belt ply is directly adjacent a belt working ply formed with a topping/coating rubber in accordance to the claimed invention. It is emphasized that the language "is associated with" does not define over the belt structure of Tanaka in view of Larson. Alternatively, if the topping/coating rubber of the zero degree layer is formed with the relevant composition, then "he at least one layer of a plurality of circumferential coils is associated with at least one layer of a crosslinked elastomeric material".

### ***Conclusion***

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R. Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Justin R Fischer/  
Primary Examiner, Art Unit 1791

January 31, 2008



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